MR-1

DATA LOGGING PRINTER

USER MANUAL

FORM 0226-0782B

tau-tron
A UNIT OF
GENERAL SIGNAL

ME-8045

tau-tron
A UNIT OF GENERAL SIGNAL

CONFIGURATION

Your unit is **serial number** _____ and is configured as follows (information on these differences is contained in the body of the manual).

Options:

___NONE

___OP-RM Rackmount Adapter

ME-8045
March 1983

MR-1

DATA LOGGING PRINTER

USER MANUAL

FORM 0226-0782B

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Phone (617)256-9013 Telex 951952

WARRANTY

All Tau-Tron products are warranted against any defects in material and workmanship. This warranty applies for one year from the date of delivery for all Tau-Tron manufactured products. The warranty period for OEM products sold by Tau-Tron will depend on the original OEM warranty (consult factory for specific products). We will repair or replace products which, upon our examination, prove to be defective during the warranty period.

NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING FITNESS FOR PURPOSE, MERCHANTABILITY OR OTHERWISE, IS GIVEN.

For any assistance, contact Customer Service with details of the instrument model, serial numbers and malfunction, see Repair Returns below.

SHIPPING DAMAGE

If any signs of damage are noted on the outside of the carton, request the carrier's agent to be present during unpacking. If external damage is found on the instrument, follow Repair Returns procedure below.

Check the electrical performance of the instrument as soon as possible after receipt. If any malfunctions are observed, follow Repair Returns procedure below.

REPAIR RETURNS

For mechanical damage or electrical malfunctions, notify Tau-Tron immediately and if the damage occurred during shipping, also notify the carrier. To return a unit for repair:

1. Call the Customer Service Department, (617)256-9013, for a Repair Authorization Number. This will reduce administrative delays and ensure prompt return of your unit.

2. Complete and attach the Repair Tag, in the rear of the manual, to your unit for positive identification.

3. Pack the unit in the original shipping carton and packing materials, if available. Otherwise use a double-walled carton (test strength of 350 lb) and shock absorbing material such as bubblewrap to prevent the unit from moving in the carton during transit. Secure the carton by sealing with heavy paper tape.

4. Send to: Tau-Tron
   27 Industrial Ave.
   Chelmsford, MA 01824
   Attn: Customer Service

CONTENTS PAGE

LIST OF ILLUSTRATIONS iii

1. SCOPE 1-1

2. DESCRIPTION 2-1

3. SPECIFICATIONS 3-1

3.1 Inputs 3-1
3.2 Output 3-1
3.3 Mechanical 3-1
3.4 Power 3-1
3.5 Fuses 3-1
3.6 Accessories Supplied 3-2
3.7 Accessories Available 3-2
3.8 Options 3-2

4. FRONT PANEL 4-1

5. REAR-PANEL I/O 5-1

6. OPERATION 6-1

6.1 Operating Procedures 6-1

7. PAPER LOADING 7-1

8. THEORY OF OPERATION 8-1

9. SERVICE 9-1

9.1 Routine Service 9-1
9.2 Repair Returns 9-1
9.3 Assistance 9-1
9.4 Self Test 9-1

10. REPLACEABLE PARTS 10-1

11. DIAGRAMS 11-1

LIST OF ILLUSTRATIONS

FIGURE	DESCRIPTION	PAGE
4-1	Front-Panel Controls and Input	4-1
6-1	Print Formats	6-2
7-1	Printer Mechanism	7-1
8-1	MR-1 Block Diagram	8-1
11-1	Printer Interface Schematic	11-2
11-2	Printer Interface Loading Diagram	11-3
11-3	Front-Panel Wiring Diagram	11-4
11-4	MB-1 Printer Cable Assembly	11-5
11-5	MB-301/SRX-1001 Cable Assembly	11-6
11-6	MB-302 Printer Cable Assembly	11-7

1. SCOPE

This instruction manual provides operation and maintenance information for the Tau-Tron MR-1 Data Logging Printer.

2. DESCRIPTION

The MR-1 Data Logging Printer is a companion unit to Tau-Tron's line of Bit Error Rate Test (BERT) equipment. These types of equipment typically detect and measure bit errors occurring in an incoming data pattern. The MR-1 allows the bit error measurements to be printed for permanent or temporary performance records in addition to allowing overnight and unmanned testing.

The MR-1 uses a thermal printer for quiet, reliable operation. It can print six digits, signs and decimal points. The printout format is determined by the test set which is driving the printer.

Features of the MR-1 are its internal print rate control which allows the actual print rate to be varied from 2 lines per second to 15 minutes per line and its external trigger input which allows the user to determine the print rate which best suits his test purposes.

3. SPECIFICATIONS

All inputs and outputs are TTL signal levels. Except for the front-panel external print input, all inputs are L or LS series TTL with 10K pullup to +5V. External print input is normal TTL with 10K pullup to +5V. The busy output is an open collector normal series TTL driver with 1K pullup to +5V.

3.1 INPUTS

Data
24 data lines accept 6 BCD digits (8421 code).

Overflow
Two lines for compatibility with both NRZ and RZ overflow inputs.

Decimal Points
Six lines for decimal point to left of corresponding digit.

Signs
Two lines to print + or - signs.

Print Strobe
Commands unit to print the data currently applied to its inputs and then advances one line. Positive true.

External Print
Front-panel BNC to allow for user selected print rates. Commands unit to print the data currently applied to its inputs and then advances one line. Negative edge triggers print cycle.

3.2 OUTPUT

Busy
Indicates that a cycle is in progress and that all inputs must remain stable. Negative true.

3.3 MECHANICAL

Bench-top cabinet. DIMENSIONS: 6 in. high x 8 in. wide x 12 in. deep.
WEIGHT: 5 lb net, 8 lb shipping.

3.4 POWER

115V ±10%, 47 to 440Hz, 50VA via a 6-foot detachable cord, supplied.
Operate/Standby switch inhibits printer without turning off power.

3.5 Fuses

The fuseholder is located on the rear panel. There are two fuses:

1/2A MDL SLO-BLO for 100 or 115VAC
1/4A MDL SLO-BLO for 230VAC

A secondary AC fuseholder is located inside the cabinet on the rear of the printer mechanism housing. It contains a 1 1/2A MDL SLO-BLO fuse.

A DC fuse is located inside the printer mechanism enclosure. To replace it, remove the top cover of the printer mechanism enclosure. The fuse is a 7A SLO-BLO. All fuses are 1/4 x 1 1/4 in. length.

3.6 ACCESSORIES SUPPLIED

Printer cable
Specify equipment to be used with (MB-1A, MB-302, SRX-1001 or BERTS-325C).

Paper
Thermal, one roll, 150 ft length.

Instuction Manual

3.7 ACCESSORIES AVAILABLE

Paper
Thermal, available in boxes of 10 rolls, 150 ft per roll.

3.8 OPTIONS

Power
For added capability, 100V ±10% AC power.

Rackmount Adapter
OP-RM 7 in. height.

4. FRONT PANEL

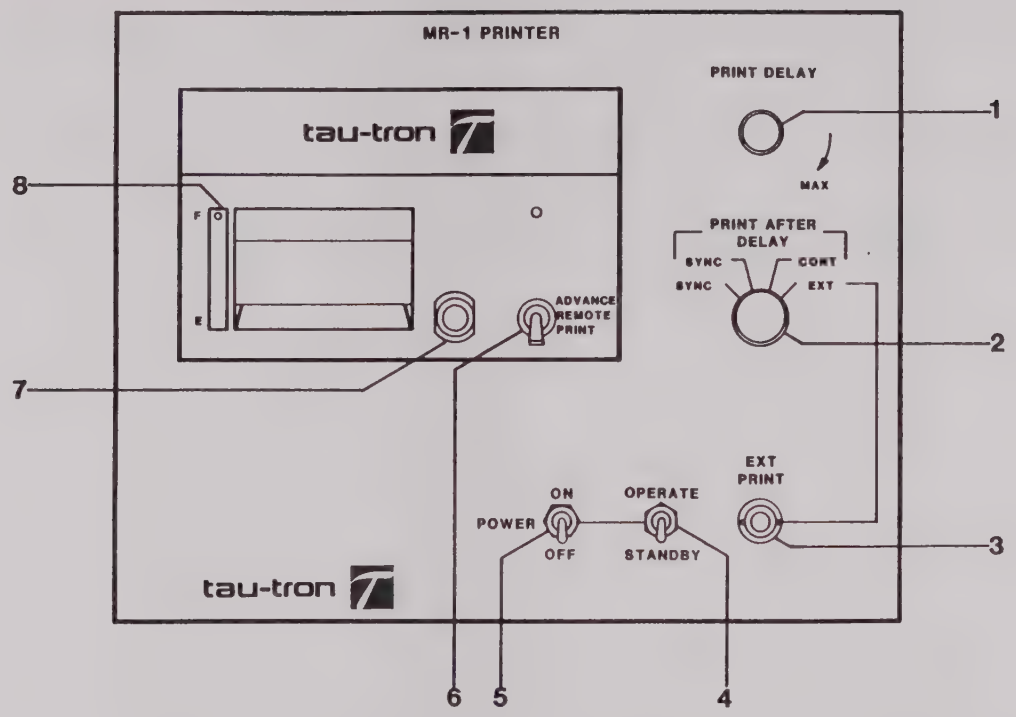


FIGURE 4-1, FRONT-PANEL CONTROLS AND INPUT

1. PRINT DELAY.....Control, provides continuous print delays of from 2 lines per second to 15 minutes per line.

2. PRINT AFTER DELAY.....Four-mode control; SYNC, provides a synchronous printing with rear-panel print-strobe input at 2 lines/s max. SYNC-PRINT AFTER DELAY, provides a synchronous printing with rear-panel print-strobe input, but inhibited by internal delay. CONT, provides an asynchronous printing at a rate determined by internal timer. EXT, provides an asynchronous printing at a rate determined by the external print input.

3. EXT PRINT.....BNC input connector, print rate is determined by the frequency, up to a maximum of 3 lines/s.

4. OPERATE/STANDBY.....Two-position toggle switch, inhibits printer without turning off power.

5. POWER ON/OFF.....Two-position toggle switch, turns power on or off.

6. ADVANCE/REMOTE/PRINT...Three-position, momentary toggle switch; ADVANCE, allows the advance of paper continuously without printing at a 6.7 lines/s rate. REMOTE, allows the print mechanism to operate all external inputs. PRINT, allows the printing of one line immediately whenever the switch is pushed down.

7. Thumbscrew.....Lock control, turn counterclockwise to loosen printer mechanism for paper loading and unloading.

8. F/E.....Indicator arm (Full or Empty), displays the relative amount of paper remaining on the internal supply roll.

5. REAR-PANEL I/O

All signals are positive true except the BUSY output. All inputs except RZ OVERFLOW must be stable at the rising edge of the PRINT STROBE. RZ OVERFLOW must be pulsed before the PRINT STROBE occurs. The Two overflows and the plus sign all print as a plus sign in the leftmost column. Any of these three will supercede a minus sign if more than one is asserted during the same print cycle.

6. OPERATION

The Tau-Tron MR-1 Printer is designed for operation with Tau-Tron's Bit Error Rate Test sets. All data, print strobe and busy functions are handled by the Tau-Tron unit driving the printer. Different printer capabilities, print-out formats and mating connectors are used by the various Tau-Tron units. Therefore, different printer cables are supplied with the MR-1 depending on the driving Tau-Tron unit.

6.1 Operating Instuctions

After AC power is applied, place the MR-1 in either Operate or Standby modes by the appropriate switches. The Standby mode is provided to allow the user to stop the printer without turning the AC power off. This is useful when the user wants to stop the printing to change test setup or some other reason and then resume printing. Using the Standby mode avoids a power-on glitch that may occur when the AC power is applied.

Four modes of operation are possible. The user can select the mode which best suits his test setup. In addition, the user can control the print rate to accurately record test results without wasting paper on unnecessary print-outs.

1. Sync — In this mode, the print cycle is triggered by each occurrence of the rear-panel PRINT STROBE input; up to a maximum of three lines per second. The user has no control over the print rate from the MR-1 in this mode of operation. It is intended for time rate and frame rate measurements using Tau-Tron Bit Error Rate Test sets.

2. Sync-Print After Delay — In this mode, the user gains control over the print rate while still triggering the print cycle from the PRINT STROBE input on the rear panel. After each print cycle, further PRINT STROBE inputs are ignored until the internal timer times out. By varying the PRINT DELAY, the maximum print rate can be limited; from 2 lines per second to 15 minutes per line. Of course, if the Bit Error Rate Test set is issuing strobes at a slower rate, the print rate will still be at the rate of the PRINT STROBE input. This is intended to be a paper saving feature. Synchronous printing is preferred for measurements like time rate or frame rate errors.

3. Cont-Print After Delay — In this mode, the print rate is solely determined by the setting of the PRINT DELAY, from 2 lines per second to 15 minutes per line. The user must ensure that meaningful data will be present at the printer inputs since the printer is now asynchronous to the data source. This mode is intended for logging errors when making totalize (cumulative) error measurements with Tau-Tron Bit Error Rate Test sets which may not issue print strobes in the totalize operation.

4. External — In this mode, the print rate is determined by the frequency of the EXT PRINT input; up to a maximum of 3 lines per second. This allows the user to print data at very slow rates or to allow synchronization to some event occurring in the test setup.

The printer mechanism also has a three-position, momentary toggle switch; ADVANCE/REMOTE/PRINT. This switch supercedes all other MR-1 controls, including OPERATE/STANDBY. The Advance mode allows the user to advance the paper continuously without printing at a 6.7 lines per second rate. Paper may also be advanced manually by pulling paper out of the front opening at any time. The Remote mode enables all external inputs and allows the printer to operate all the controls normally. The Print mode allows the user to print one line immediately whenever the toggle switch is pushed down. After the single print and advance cycle, the printer will accept the selected print strobes even if the switch is held down.

Typical print formats are shown below. The exact format depends on the signal source driving the MR-1.

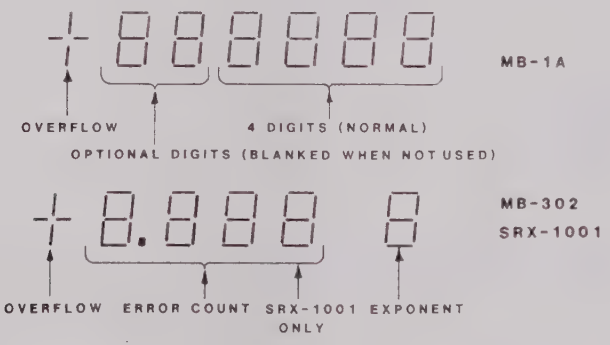


FIGURE 6-1, PRINT FORMATS

A paper quantity indicator is located to the left of the paper opening. It is a mechanical pointer indicating the relative amount of paper supply remaining; from full (F) to empty (E). Refer to Section 7 for detailed loading and unloading instructions.

7. PAPER LOADING

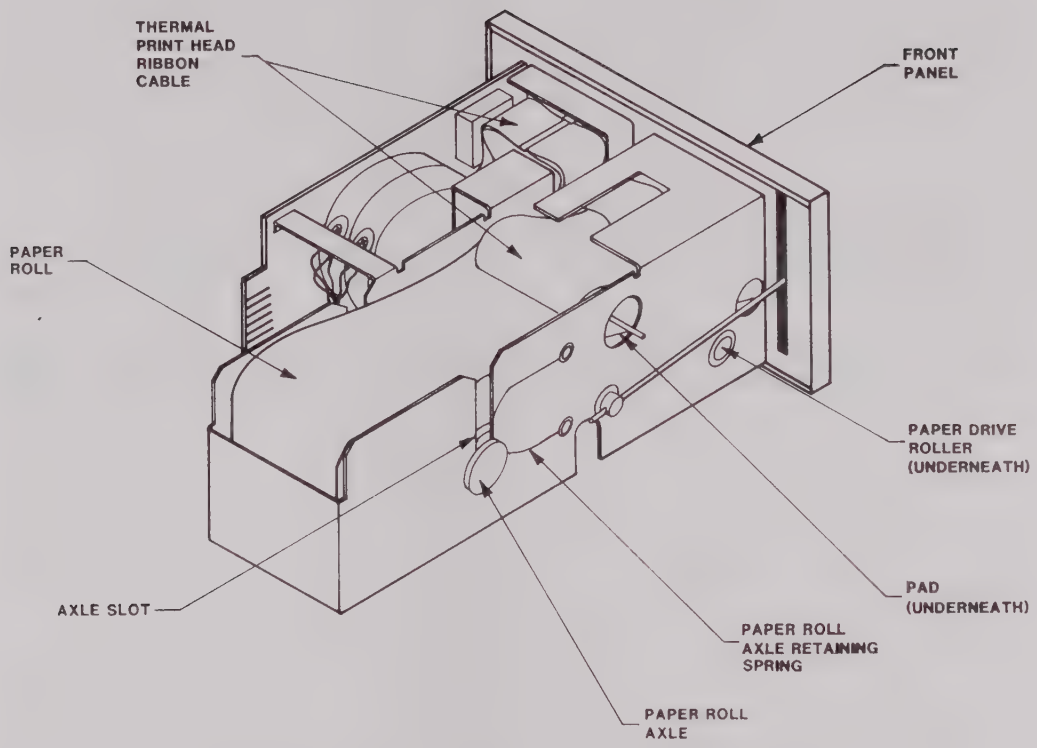


FIGURE 7-1, PRINTER MECHANISM

1. Shut off all power to the printer.

2. Slide out the printer mechanism by first loosening the front-panel thumbscrew counterclockwise until it stops. Pull the thumbscrew firmly straight out and the front-panel/printer assembly will slide out all the way. Some force may be needed to release the internal PC connection.

3. Pull the retaining spring holding the paper roll axle out. This automatically lifts the thermal printhead from the paper drive roller (see illustration). Remove any paper from the previous roll.

4. Pull the remaining paper backward out from under the printhead. Grasp both ends of the paper roll axle with fingertips and pull straight up out of the printer assembly. The axle will slide past the circular axle retaining spring as shown in the illustration.

5. Slide the paper roll axle out of the used paper roll and reinsert the axle in a new roll.

NOTES

1. Do not discard the axle.
2. Clean off paper roller after each paper change.

6. Slide the new roll and axle past the retaining spring and insert the paper over the pad and under the printhead ribbon cable (see illustration) until the paper is threaded from the rear and passes over the roll. Paper should be cut straight across for easy insertion. Only the outside paper surface is treated for printing.

7. Pull the paper through the front-panel slot, clip the retaining spring onto the paper roll axle and slide the printer mechanism back into the housing. Push the front-panel printer assembly firmly into the housing as far as it will go. This will seat the internal AC board connection.

8. Rotate the thumbscrew clockwise until it stops and turn on the power. The paper may be manually advanced simply by pulling it out of the front slot.

8. THEORY OF OPERATION

The logic section of the MR-1 is extremely simple. The print mechanism is a DATEL DPP-Q7 panel printer and contains the power supply and all the motor/print control logic including the BCD interface. All data and decimal point inputs drive the DPP-Q7 directly. (Refer to MR-1 Block diagram below).

Only a print strobe is required by the DPP-Q7 and its only output is a Busy signal. A multiplexer on the MR-1 logic card selects the strobe signal to drive the DPP-Q7. The print strobe input, the print strobe input gated by the print delay timer, the print delay timer, or the external print input are the four choices available. One of these fires a single shot which strobes the DPP-Q7. Busy from the DPP-Q7 disables the single shot from retriggering too early and disables the SYNC-PRINT AFTER DELAY latch.

The print delay timer is a 556 Type Oscillator. After the end of Busy, it can either trigger another print cycle or enable the print strobe input by setting the SYNC-PRINT AFTER DELAY latch.

The DPP-Q7 accepts two sign inputs: Horizontal bar and vertical bar. The minus sign asserts the horizontal bar only. NRZ OVERFLOW (MB-1) and the plus sign assert both bars. RZ OVERFLOW (MB-302) sets a flip-flop which asserts both sign bars. The flip-flop is reset by the DPP-Q7 print command.

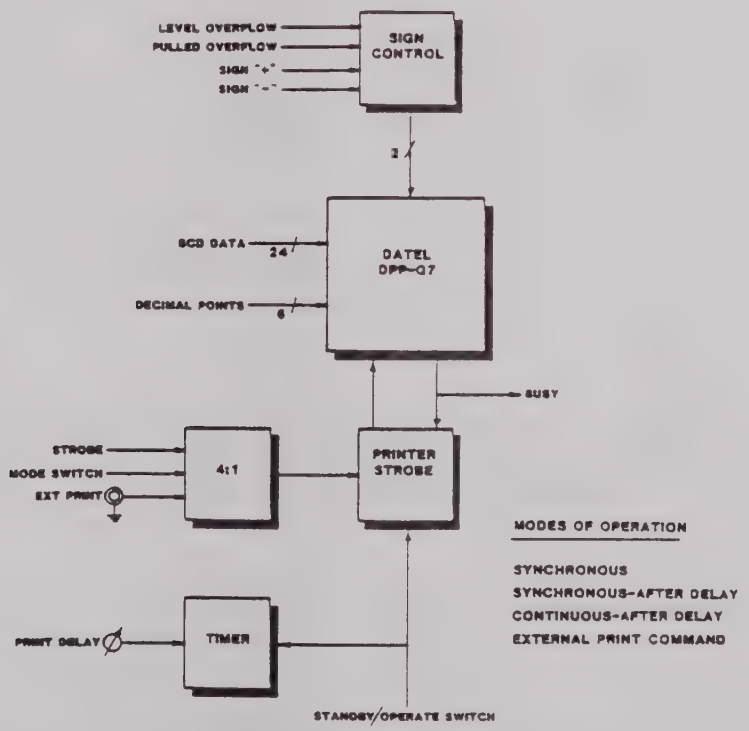


FIGURE 8-1, MR-1 BLOCK DIAGRAM

9. SERVICE

9.1 Routine Service

WARNING

Hazardous voltages exist in this equipment. Do not attempt access to the interior without disconnecting the line cord from the power receptacle.

Visually inspect the unit to check for loose hardware and cable connections. Periodically clean the outside and inside of the printer.

9.2 Repair Returns

For mechanical damage or electrical malfunctions, notify Tau-Tron immediately; and if the damage occurred during shipping, also notify the carrier. To return a unit for repair:

1. Call the Customer Service Department, (617)256-9013, for a Repair Authorization Number. This will reduce administrative delays and ensure prompt return of your unit.

2. Complete and attach the Repair Tag, in the rear of the manual, to your unit for positive identification.

3. Pack the unit in the original shipping carton and packing materials, if available. Otherwise use a double-walled carton (test strength of 350 lb) and shock absorbing material such as bubblewrap to prevent the unit from moving in the carton during transit. Secure the carton by sealing with heavy paper tape.

4. Send to: Tau-Tron
   27 Industrial Ave.
   Chelmsford, MA 01824
   Attn: Customer Service

9.3 Assistance

For service assistance call the Tau-Tron Customer Service Dept., (617)256-9013. Their experience and expertise can often save you valuable time in correcting any equipment malfunction.

9.4 Self Test

Refer to Section 6, Operation. The procedures used verify the proper operation of the printer.

10. REPLACEABLE PARTS

Reference designations include diagram and components.

Ref Des	Description	Tau-Tron No.	True Manufacturer No.
TCJ-53775	PRINTER INTERFACE		
	Pin, male, printer circuit board mount	9303-0003	AMP 61097-2
	P.C. board TT0343	9601-0343	Not known
R1 thru R6	Resistor, 10K ±5% 1/8W carbon, Allen Bradley	0012-5100	Type BB
R7	Resistor, 39K 5%, 1/8W carbon, Allen Bradley	0012-5390	Type BB
R8	Resistor, 10K 5%, 1/8W carbon, Allen Bradley	0012-5100	Type BB
R9	Resistor, 10K 5%, 1/8W carbon, Allen Bradley	0012-5100	Type BB
R10	Resistor, 1K 5%, 1/8W carbon, Allen Bradley	0012-4100	Type BB
R11 thru R16	Resistor, 10K 5%, 1/8W carbon, Allen Bradley	0012-5100	Type BB
C1	Capacitor, 10uf 35V 20%, Tantalum Electrolytic, Sprague	1024-5210	150D106X9035R2
C2	Capacitor, 120uf 10V 20%, Tantalum Electrolytic, Sprague	1024-1312	150D127X0010R2
C3	Capacitor, .01uf 50V 20%, Ceramic, Vitramon	1084-4710	1J0805X103MH
C4	Capacitor, 10uf 25V 20%, Tantalum, Corning	1064-4210	MMS-025-106R-20
C5 thru C13	Capacitor, .01uf 50V 20%, Ceramic, Vitramon	1084-4710	1J0805X103MH
C14	Capacitor, 33uf 10V 20%, Tantalum, Corning	1064-1233	MMS-010-336R-20
CR1	Diode, Fairchild	2112-4148	IN4148
UA1	Integrated circuit, Texas Instruments	4012-74L74	SN74L74N
UA2	Integrated circuit, Texas Instruments	4012-74L54	SN74L54N
UA4	Integrated circuit, AMD	4012-NE556	NE556A

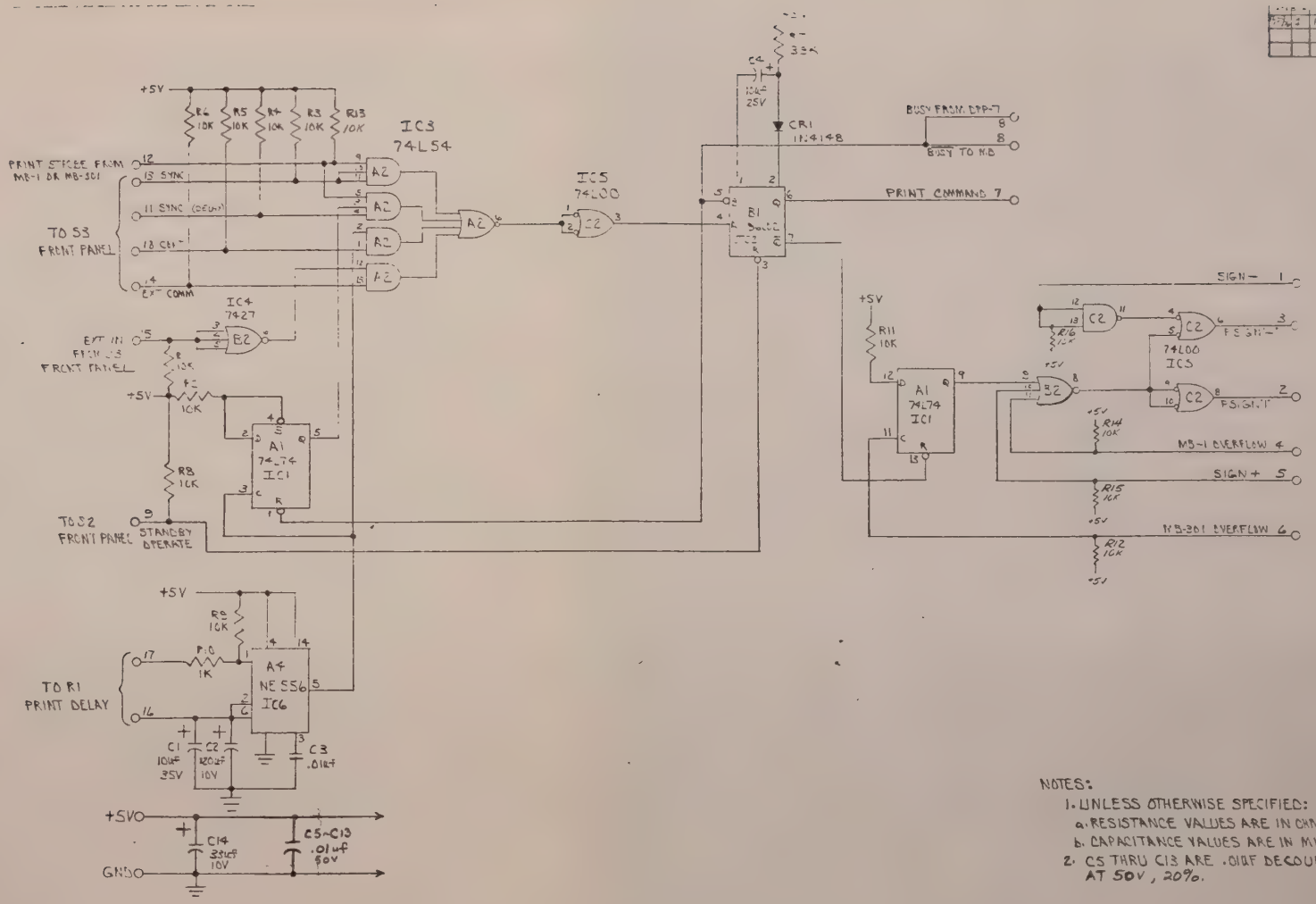
Ref Des	Description	Tau-Tron No.	True Manufacturer No.
UB1	Integrated circuit, Fairchild	4012-96L02	96L02DC
UB2	Integrated circuit, Texas Instruments	4012-7427	SN7427N
UC2	Integrated circuit, Texas Instruments	4012-74L00	SN74L00N
TDM-53770	FRONT PANEL		
	Front panel	9705-3757	———
	Rear panel	9705-3773	———
	AC line cord, 3-conductor 18AWG 7A 125VA, 7.5 ft., Belden	9000-0050	17280-13-8
	Printer chassis	9705-3774	———
	Printer label	9705-4001	———
	Datel digital panel, includes	9150-07A1	———
	Rogan knob 1/8 in. shaft	9802-670D	RB-670D
	Rogan knob 1/4 in. shaft	9802-671W	RB-671-DC-M9
	Bracket, with screw pan Hd. #4-40X 3/8 Lg. washer; Nut, Hex #4-40	9705-4300	
LF1	Filter 5A, 2 in. x 2.75 in. x 75in.	9000-0001	Corcom 5B4
F1	Fuse, slo blo 1.5A, Littlefuse	9000-0101	31301.5
	Fuseholder, Littlefuse	9000-0102	342014A
	Enclosure, Scientific American	9190-0056	E060810FPT
S1/S2	Switch, toggle, Spdt (2), C&K	9200-0005	7101SYCQ
S3	Switch, blade, Alcoswitch	9202-0013	MSS-4250
J1/J2	Connector, AC, 30-conductor (15 per side) double-sided PC board connectors, Datel	———	58-2073083
J3	Connector, BNC, Amphenol	9301-001K	31-221
J4	Connector, 50-pin, Amphenol	9300-0095	57-40500
R1	Potentiometer, variable 5Mohms 1/2W, 10%, Bourns	0333-7500	3299X-1-505
TCK-53772	MB-301 CABLE ASSEMBLY		
	Conductor cable, shielded 4.5 ft. #5305	———	———

Ref Des	Description	Tau-Tron No.	True Manufacturer No.
	Connector plug, Amphenol	9300-0094	57-30500
	Connector plug, Winchester	9307-0001	MRE-34PJTDH
TBK-53988	MB-302 CABLE ASSEMBLY		
	Cable, ribbon, flat, Ansley	------	171-50
	Connector, 50-pin, Amphenol (2)	9300-0140	57F-30500

11. DIAGRAMS

This section includes the following figures:

FIGURE	DESCRIPTION	DIAGRAM
11-1	Printer Interface Schematic	TCJ-53775
11-2	Printer Interface Loading Diagram	TCK-53768
11-3	Front-Panel Wiring Diagram	TDM-53770
11-4	MB-1 Printer Cable Assembly	TCK-53771
11-5	MB-301/SRX-1001 Cable Assembly	TCK-53772
11-6	MB-302 Printer Cable Assembly	TBK-53988



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   a. RESISTANCE VALUES ARE IN OHMS, ±5%, 1/8W.
   b. CAPACITANCE VALUES ARE IN MICROFARADS.
2. C5 THRU C13 ARE .01UF DECOUPLING CHIP CAPS. AT 50V, 20%.

LAST DESIGNATION USED	
C14	R16
CR1	
IC6	

REV		
A	3	REV PER DCN # 00213

Pg. 11-2

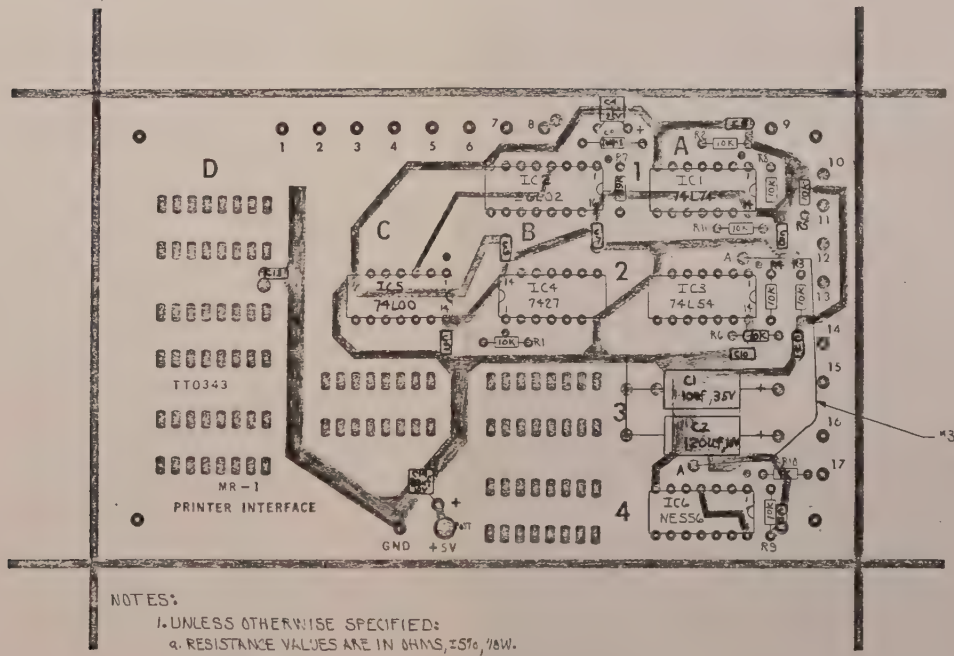
Fig. 11-1

1 of 1

TOLERANCES (EXCEPT AS NOTED)	TAU-TRON INC		
DECIMAL = ±	MR-1	SCALE ±	DRAWN BY / APPROVED BY
FRACTIONAL = ±	TITLE: PRINTER INTERFACE SCHEMATIC		
ANGULAR = ±	DATE 5-13-76	DRAWING NUMBER TCJ-53775	REV 1

BRUNING 40-21

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	1	REVISED PER DCN # 00267 BAC	5/25/77	



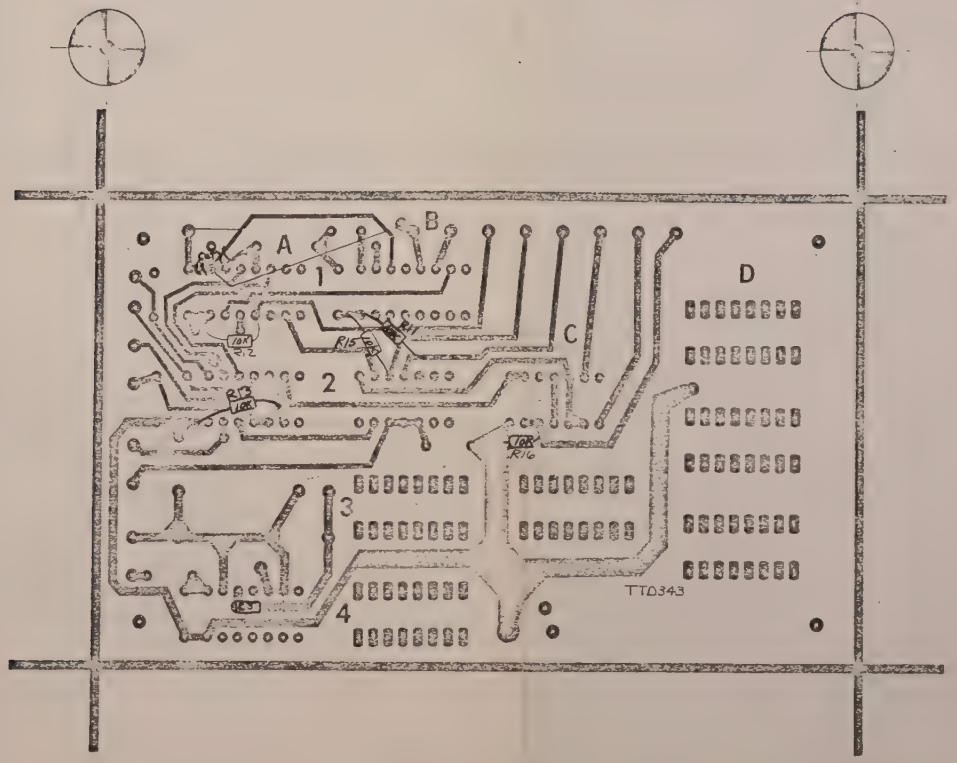
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   a. RESISTANCE VALUES ARE IN OHMS, ±5%, 1/8W.
   b. CAPACITANCE VALUES ARE IN MICROFARADS.
2. □ = .01µf CHIP CAP.
3. ALL COMPONENT LEADS OVER 1/8" LONG MUST BE INSULATED WITH CLEAR TUBING.

4. ⊗ = FEED THRU 1 PLACE #24 BUSS WIRE TO BE SOLDERED TOP AND BOTTOM.

SHT 1 OF 2

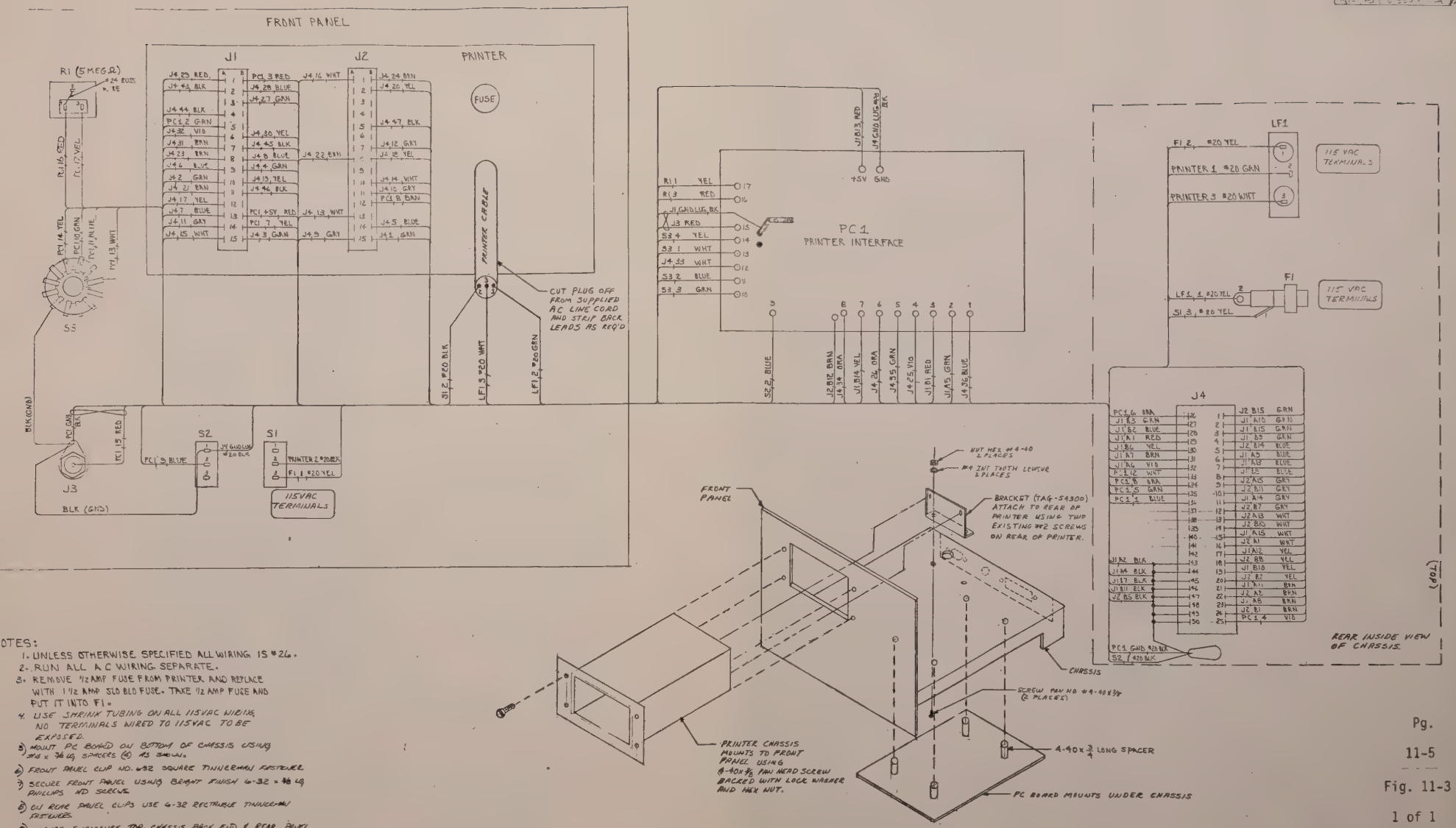
TAU-TRON INC		
MR-1	2/1	W. Bathum
TT0343 LOADING DIAGRAM PRINTER INTERFACE		
5-10-76	TCK-53768	



WIRING SIDE

SHT 2 OF 2

TAU-TRON INC		
MR-1	2/4	
TT0343 LOADING DIAGRAM PRINTER INTERFACE		
5-10-76	TCK-53768	



NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL WIRING IS #26.
2. RUN ALL A C WIRING SEPARATE.
3. REMOVE 1/2 AMP FUSE FROM PRINTER AND REPLACE WITH 1 1/2 AMP SLO BLO FUSE. TAKE 1/2 AMP FUSE AND PUT IT INTO F1.
4. USE SHRINK TUBING ON ALL 115VAC WIRING. NO TERMINALS WIRED TO 115VAC TO BE EXPOSED.
5) MOUNT PC BOARD ON BOTTOM OF CHASSIS USING #6 x 3/4 LG SPACERS (4) AS SHOWN.
6) FRONT PANEL CLIP NO. 432 SQUARE TINNERMAN FASTENER.
7) SECURE FRONT PANEL USING BRIGHT FINISH 6-32 x 3/8 LG PHILLIPS HD SCREWS.
8) ON REAR PANEL CLIPS USE 6-32 RECTANGLE TINNERMAN FASTENERS.
9) SECURE ENCLOSURE TOP, CHASSIS BACK END & REAR PANEL USING PHILLIPS HD SCREWS 6-32 x 3/8 LG.

Pg. 11-5

Fig. 11-3

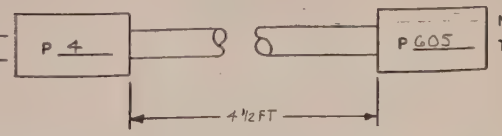
1 of 1

TOLERANCES (UNLESS OTHERWISE NOTED)	TAU-TRON INC		
DECIMAL ±	MR-1	SCALE	DRAWN BY / APPROVED BY
FRACTIONAL ±	TITLE: WIRING DIAGRAM		
ANGULAR ±	DATE: 5-12-76	DRAWING NUMBER: TDM-53770	SHT 5

REVISIONS					
ZONE	LTR	DESCRIPTION		DATE	APPROVED
	1	REV PER DCN #00273	BRC	6/2/[illegible]	
	2	PER DCN #00460	CS	11/21/[illegible]	
	3	REV PER DCN #00591	DGO	10 JAN 80	[illegible]

UNIT MR-1 — UNIT MB-1

MFG'S NO. 57-30500
TAU-TRON NO. 9300-0094



MFG'S NO. 57-30500
TAU-TRON NO. 9300-0094

(WIRE CUT LENGTH)

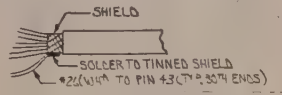
UNIT MR-1 PIN #	AWG	LENGTH	COLOR	UNIT MB-1 PIN #	FUNCTION
1	24	4 1/2 FT	BLK	1	BCD 1
2	"	"	BRN	2	" 2
3			RED	3	4
4			ORA	4	8
5			YEL	5	10
6			GRN	6	20
7			BLUE	7	40
8			VIO	8	80
9			GRY	9	100
10			WHT	10	200
11			WHT/BLK	11	400
12			WHT/BRN	12	800
13			WHT/RED	13	1000
14			WHT/ORA	14	2000
15			WHT/YEL	15	4000
16			WHT/GRN	16	8000
17			WHT/BLUE	17	10000
18			WHT/VIO	18	20000
19			WHT/GRY	19	40000
20			WHT/BLK/BRN	20	80000
21			WHT/BLK/RED	21	100000
22			WHT/BLK/ORA	22	200000
23			WHT/BRN/YEL	23	400000
24	"	"	WHT/BLK/BRN/VIO	24	BCD 800000
25	24	4 1/2 FT	WHT/BLK/BRN/BLUE	25	MB-1 OVERFLOW
26	22GA	WIRE	JUMPER		
27	MR-1	PIN 26	27 & 28		
28	29, 30	31, 32,	35 AND		
29	36	TOGETHER	WITH		
30	#26	BLK TO	MR-1		
31	PIN 47				
32					
33	24	4 1/2 FT	WHT/BLK/VIO	28	PRINT STROBE
34	24	4 1/2 FT	WHT/BLK/GRY	29	BUSY TO MB
35	#26	TIE TO PIN #47	BLK		
36	#26	TIE TO PIN #27	BLK		
37				37	NOT USED
38				38	"
39				39	"
40				40	NOT USED

UNIT MR-1 PIN #	AWG	LENGTH	COLOR	UNIT MB-1 PIN #	FUNCTION
41				41	NOT USED
42				42	NOT USED
43	#26		WHT	43	SHIELD GROUND
44				44	TO P-31 MB-1 CONN 22GA WIRE JUMPER
45				45	NOT USED
46				46	NOT USED
47	26		BLK		
48	"			48	NOT USED
49	"			49	"
50				50	NOT USED
				31	22GA WIRE JUMPER TO
					MB-1 PIN 44
				26	NOT USED
				27	" "
				30	" "
				32	" "
				33	" "
				34	" "
				35	" "
				36	NOT USED

UNIT PIN #	AWG	LENGTH	COLOR	UNIT PIN #	FUNCTION

NOTES:

1. RUBBER GROMMETS TO BE USED UNDER STRAIN RELIEF CLAMPS ON P4 & P605.
2. P4 & P605 SHIELD TERMINATION TO BE AS SHOWN:



CAUTION

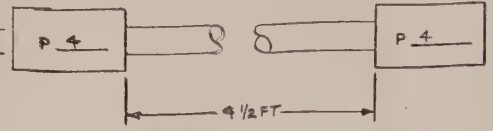
CONNECTORS NOT NECESSARILY PIN FOR PIN

CABLE MATERIAL: ALPHA #5305 27 CONDUCTOR SHIELDED CABLE.

TOLERANCES (EXCEPT AS NOTED)	TAU-TRON INC.		
DECIMAL ±		SCALE ±	DRAWN BY [illegible] APPROVED BY
FRACTIONAL ± 1/64	TITLE MB-1 PRINTER CABLE ASS'Y		
ANGULAR ±	DATE 5-12-76	DRAWING NUMBER TCK-5377[illegible]	REV 3

UNIT MR-1 | UNIT MR-301

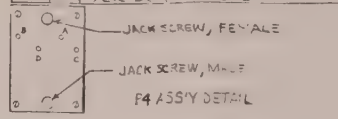
MFG'S NO. 57-30500
TAU-TRON NO. 9300-0094



MFG'S NO. MRE34PJTDH
TAU-TRON NO. 9307-0001

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	1	REV PER ECO # 0[illegible] BAC	5/4/78	
	2	PER ECO # [illegible] 23	11/6/79	
	3	PER ECO # [illegible] AM	6/11/79	BJW



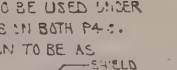
UNIT MR-1 PIN #	AWG	LENGTH	COLOR	UNIT MB-301 PIN #	FUNCTION
1			BLK	T	BCD 1 (EXPONENT)
2			BRN	F	2
3			RED	B	4
4			ORA	X	BCD 8 (EXPONENT)
5				L	NOT USED
6				Z	
7				R	
8				V	NOT USED
9			YEL	C	BCD 1 (DIGIT 1)
10			GRN	FF	2
11			BLUE	A	4
12			VIO	E	8 (DIGIT 1)
13			GRY	S	1 (DIGIT 2)
14			WHT	K	2
15			WHT/BLK	M	4
16			WHT/BRN	P	8 (DIGIT 2)
17			WHT/RED	CC	1 (DIGIT 3)
18			WHT/ORA	W	2
19			WHT/YEL	Y	4
20			WHT/GRN	AA	8 (DIGIT 3)
21			WHT/BLUE	LL	1 (DIGIT 4)
22			WHT/VIO	HH	2
23			WHT/GRY	KK	4
24			WHT/S-BLU	MM	BCD 8 (DIGIT 4)
25			WHT	N	SHIELD GROUND
26			WHT/BLK/RED	D	MB-301 OVERFLOW
27			WHT/BLK/ORA	EE	DECPT .000000 (DIGIT 4)
28			WHT/BLK/BRN	U	DECPT 0.00000 (DIGIT 3)
29			WHT	DD	SHIELD GROUND
30			WHT/BLK/BLU	BB	DECPT 0000.00 (DIGIT 1)
31			WHT/BLK/GRN	H	DECPT 000.000 (DIGIT 2)
32			WHT	NN	SHIELD GROUND
33			WHT/BLK/VIO	J	PRINT STROBE
34					NOT USED
35			WHT		SHIELD GROUND
36			WHT		SHIELD GROUND
37					NOT USED
38					
39					
40					NOT USED

UNIT MR-1 PIN #	AWG	LENGTH	COLOR	UNIT MB-301 PIN #	FUNCTION
41					NOT USED
42					NOT USED
43			WHT	JJ	SHIELD GROUND
44					NOT USED
45					
46					
47					
48					
49					
50					NOT USED

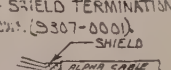
UNIT PIN #	AWG	LENGTH	COLOR	UNIT PIN #	FUNCTION

NOTES:

1. RUBBER GROMMETS TO BE USED UNDER STRAIN RELIEF CLAMPS ON BOTH P4's.
2. P4 SHIELD TERMINATION TO BE AS SHOWN (9300-0094).



3. P4 SHIELD TERMINATION TO BE AS SHOWN (9307-0001).

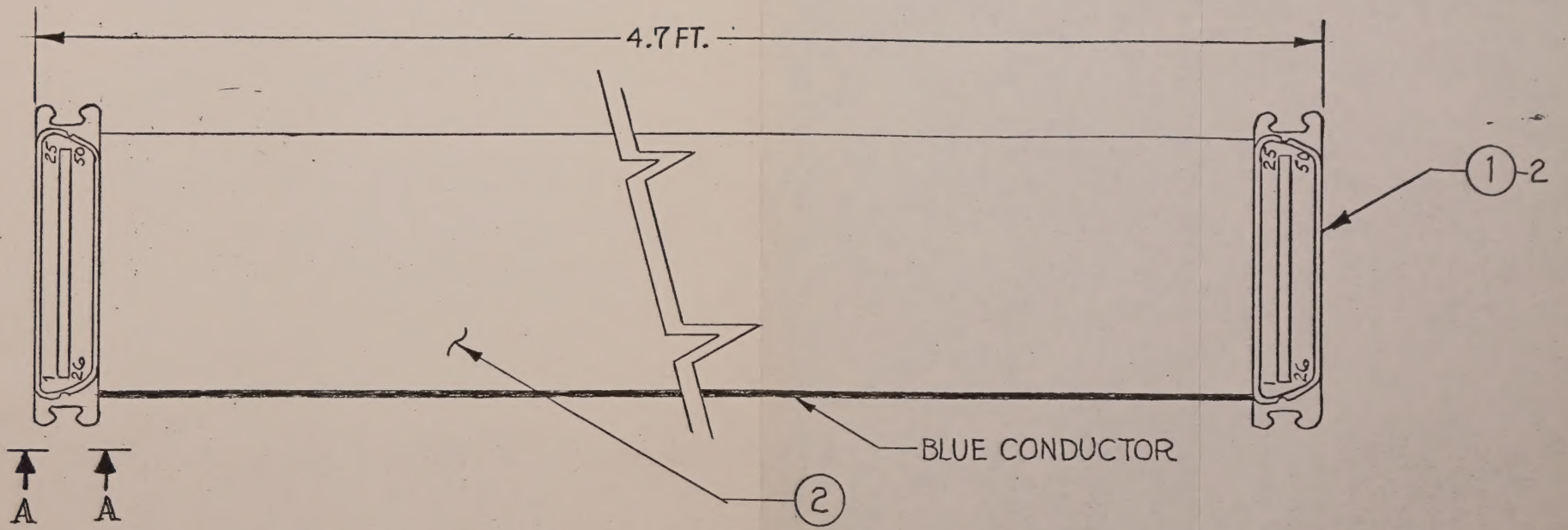


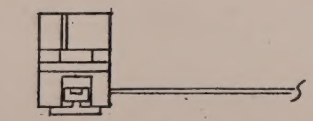
4. CUT WHT/BLK/GRY WIRE.

	ORX-1001
	MB-301B
	MB-301A
NEXT ASSY	USED ON
APPLICATION	

TOLERANCES (EXCEPT AS NOTED)	TAU-TRON INC.
DECIMAL ±	SCALE ± DRAWN BY [illegible]
FRACTIONAL ± 1/64	TITLE MB-301 PRINTER CABLE ASSY
ANGULAR ±	DATE 5-10-76 DRAWING NUMBER TCK-53772 REV 3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





VIEW A-A

WHERE APPLICABLE: REMOVE ALL BURRS & BREAK SHARP EDGES TO 1/64.	
	PTS-107
	SRX-1001
	MB-302
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.

DR	John Perry	4 MAR 81
CHK	B. Cooper	3-24-81
APPD	D. Perkins	3-25-81

APPROVED
BY DIRECTION OF

tau-tron inc
Chelmsford, Ma. 01824

DRAWING TITLE
MRT TO MB-302
PRINTER CABLE ASSEMBLY

SIZE	CODE IDENT NO.	DRAWING NO.	REV
B		TBK-53988	O
SCALE 1/1	TMI SERIES	SHEET 1 OF 1	

Pg. 11-8
Fig. 11-6
1 of 1

Tau-Tron, Inc. 27 Industrial Ave., Chelmsford, MA 01824